

REMARKS

Claims 1 to 19, 22 and 23 are pending in this application. Of these, claims 1, 13, 22 and 23 are independent.¹ Favorable reconsideration and further examination are respectfully requested.

Initially, we thank the Examiner for the indication that claims 7 and 11 recite allowable subject matter. As shown above, claims 7 and 11 have been rewritten into independent form as claims 22 and 23, respectively. There were some wording changes, such as changing “having” to “comprising” in both claims, and removing the word “wherein”. These changes are not believed to affect patentability of the claims.

In the Office Action, independent claims 1 and 13 were each rejected under §102 over both JP2002075427 (Yoshida) and over JP2002008690 (Misumi). As shown above, claim 1 has been amended to recite that the inlet port is connected to a fluid flow plate to deliver the cooling water to a membrane-electrode assembly adjacent to the fluid flow plate, and that cooling circuit is for recycling discharged water and/or water vapor directly to the membrane-electrode assembly. The art is not understood to disclose or to suggest these features of claim 1.

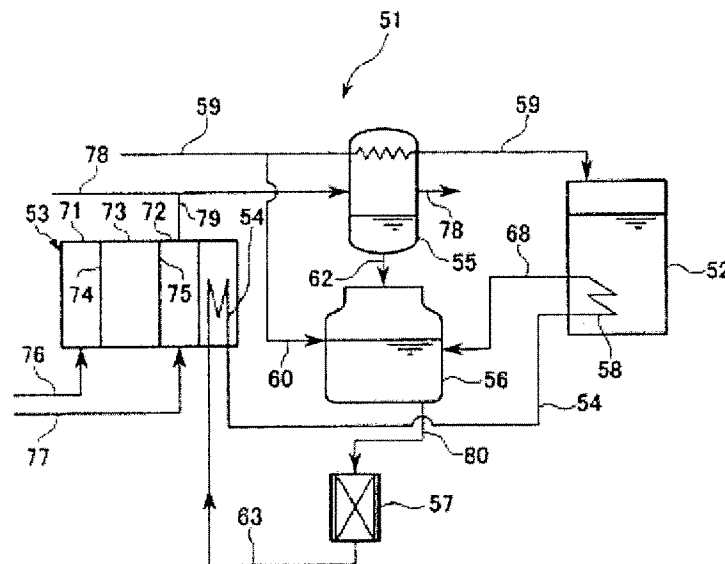
Yoshida discloses a closed loop coolant circuit 10 comprising a fuel cell 1, electrical inverter 3, and heat exchanger 9 in hot water tank 8. It is not clear from the abstract and drawings exactly how the coolant circuit is connected to fuel cell 1. However, there is no indication that discharged water and/or water vapor is recycled directly to the membrane-electrode assembly. In this regard, the abstract in Yoshida indicates that the “piping 10 forms a

¹ The Examiner is urged to independently confirm this recitation of the pending claims.

closed loop". This implies that the discharged water and/or water vapor is not applied directly to a membrane-electrode assembly, but possibly to a conventional cooling plate.

U.S. Patent Publication No. 2001/0053470, which is being cited in an IDS filed herewith, is a U.S. counterpart to JP2002008690. The embodiment shown in the abstract of JP2002008690 appears to correspond to that of Fig. 5 of US2001/0053470, i.e.:

FIG. 5



As described in US2001/0053470,

[0107] The fuel cell power generating equipment 51 has a fuel cell stack 53, a coolant circulation path 54 which regulates the temperature of the fuel cell stack 53, a heat exchanger 55 for recovering water which condenses and recovers steam in the exhaust gas discharged from the fuel cell stack 53, a water storage tank 56 which retains supply water recovered by the heat exchanger 55, a water purifying equipment 57 which purifies the supply water in the water storage tank 56 and supplies the purified water as coolant to the coolant circulation path 54, an heat exchanger 58 as heating means which heats water using the coolant to provide hot water, and a auxiliary water supply path 60 which feeds auxiliary water, such as city water, to the water storage tank 56.

[0108] The fuel cell stack 53 is so constructed as to have an anode 71 and a cathode 72 sandwiching an electrolyte 73. Electrode plates 74 and 75 are respectively provided between the anode 71 and the electrolyte 73 and between the cathode 72 and the electrolyte 73.

[0115] As the coolant circulates in the coolant circulation path 54, the fuel cell stack 53 is cooled down to maintain a predetermined temperature. At this time, the coolant is heated to a high temperature (normally 60 to 80.degree. C.) and is led into the heat exchanger 58.

Thus, as is clear from US2001/0053470, the coolant stays within circulation path 43. There is no indication whatsoever that the coolant is recycled directly to the membrane-electrode assembly, as recited in claim 1. The same is true for the other embodiments of US2001/0053470.

For at least the foregoing reasons, claim 1 is believed to be patentable.

Amended independent claim 13 recites that the water cooling circuit is for retrieving the water and vapor condensate from the heat exchanger conduit and supplying the water and/or vapor condensate directly to the membrane-electrode assembly in the fuel stack. As explained above, the art is not understood to disclose or to suggest at least this feature. Accordingly, claim 13 is believed to be patentable.

The dependent claims are also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, each has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this

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paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, we respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

The undersigned attorney can be reached at the address shown below. All telephone calls should be directed to the undersigned at 617-521-7896.

Please apply any deficiency in fees or credit any overpayment to Deposit Account 06-1050 referencing Attorney Docket No. 17638-006US1.

Respectfully submitted,

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